White Paper

The Bridge API: Supporting the joint development of technical publications and training material.

Introduction

Government and industry have ever-increasing opportunities to integrate systems to more effectively exchange data. Systems can now instantly exchange data that before were restricted to stove-piped data bases and repositories. Networks and applications are now harmonizing communities of practice resulting in streamlined and cost-effective business processes.

To leverage the data exchange trends, the U.S. and Swedish Defence together with Italian industry are working on a project to "bridge" the technical publication community with the learning and training community. The Bridge Project is developing a communication and data exchange Application Programming Interface (API), or Bridge API, to help content developers establish learning data as part of technical publication environments as well as seamlessly integrating technical publication data into learning environments and products.

Bridge Project Background

The Bridge Project was launched in September of 2008. The project's pre-planning phase was established to address the common goal of bringing technical publications and training environments closer together and providing tangible solutions, like the Bridge API. The result of this phase was a technical development strategy to be implemented during the next years (2009-2011) within the defined areas of collaboration. The working group consisted of subject matter experts from government and industry, including Common Source Database (CSDB) vendors as well as learning content authoring application providers.

Bridge API Goals

This whitepaper sets out to describe the general concepts and architecture of the API with the goal of achieving general awareness of the work performed to date. Furthermore the desire is to have S1000D CSDB vendors and learning content authoring applications adopt and implement the Bridge API, as well as customers who have the requirement to develop and integrate technical publications and learning content. The initial goal of the Bridge API is to provide a seamless connection between learning content authoring tools (LCATs) and technical publication database environments. The specific use case is focused on technical information supporting maintenance and operational procedures and training.

Furthermore, the use case includes the assumption that all data being exchanged are produced in the S1000D technical data specification.

The S1000D technical data specification is based on two principles:

- Technical content is chunked into data modules
- The total collection of data modules is conceptually referred to as a “common source database”.

The Bridge API principles will provide the following value:

- Ability of learning content developers to seamlessly reuse technical data modules
- Ability of any LCAT to exchange data with any technical publication database environment
- Ability to apply the Bridge API between any system that extends S1000D product support to learning and training product development

Conceptual Architecture Overview

The Bridge API will support a common, interoperable communication protocol and data exchange mechanism that could be implemented by a variety of applications. The Bridge API is Web Service-based and defines a set of operations, data requirements, message format constraints and behaviors associated with each operation. The Bridge API has a defined Web Service Description Language (WSDL) that enables multiple technical publication database environment vendors to build a set of common, standardized web service operations that can be utilized by a variety of different LCATs. **Figure 1** illustrates a conceptual view of the Bridge API.

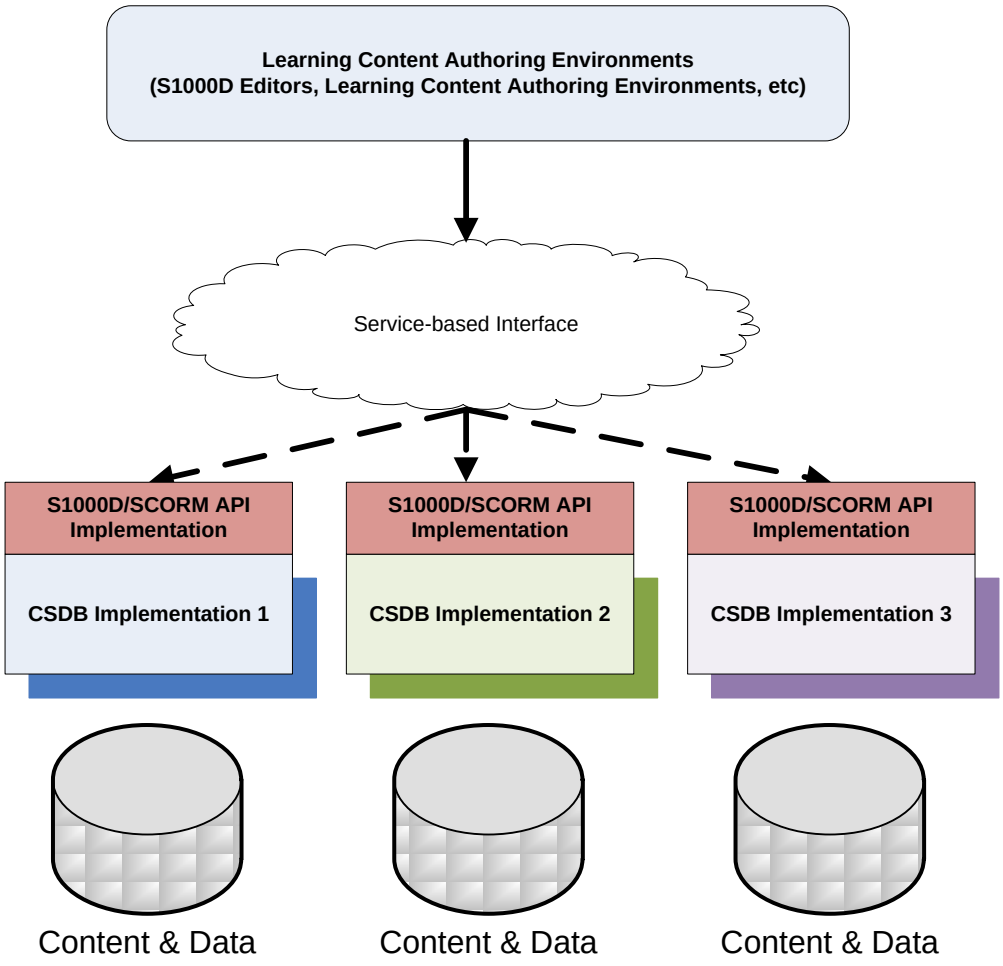

Figure 1 – A Conceptual View of the Bridge

Services Architecture

Like traditional web services, the Bridge API services architecture is a combination of client-side and service-side software, hardware, schemas and other implementation specific services. This service architecture can be depicted as in **Figure 2**.

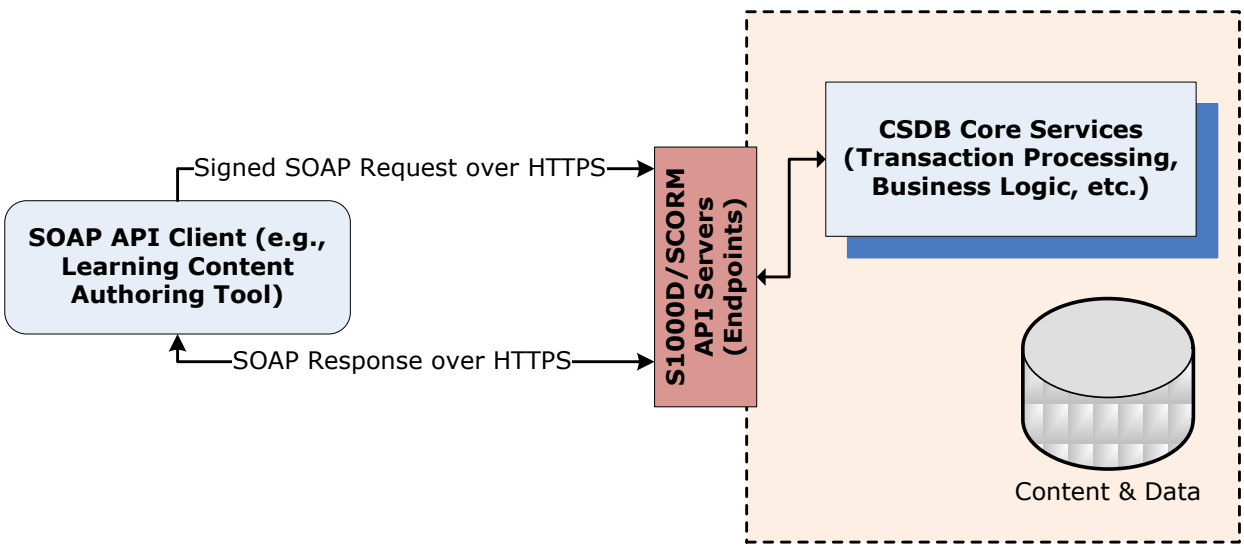

Figure 2: The Bridge API Services Architecture

Conclusion

The Bridge API will enable systems to come together and extend comprehensive product support to learning and training content. Systems integration will help ensure training data is developed and maintained in environments shared with authoritative and supporting sources. This integration strategy will afford more accurate and up-to-date content, as well as contribute to a reduction in total product ownership costs.

Project Contacts:

The first release for public comments is planned for Q1/2011. Please email the project leads below for more information and to become involved.

Wayne Gafford, U.S. Bridge Project Lead, Advanced Distributed Learning, Office of the Secretary of Defense (wayne.gafford@adlnet.gov)

Sylvia Schwab, European Bridge Project Lead on behalf of Swedish Defence (FMV) (sylvia.schwab@corena.com)

Stefano Tedeschi, Information Technologies Dept., Managing Director, ISSELNORD (stefano.tedeschi@isselnord.it)